

IN THE CLAIMS:

1. (currently amended) A vessel filter implantable in a vessel of a patient comprising a first region and a second region, the filter movable between a collapsed position for delivery to the vessel and an expanded position for placement within the vessel, the filter remaining in the expanded position in the vessel after a delivery device for the filter is withdrawn from the vessel, the first region of the filter having a mounting portion for mounting the vessel filter within the vessel and a first filter portion converging to form a first converging region at a first end portion, the mounting portion having a first end spaced from the second region, the first converging region being positioned radially and axially inwardly of the first end of the mounting portion such that the first end of the mounting portion is at a terminal end of the filter and the first filter portion is positioned closer to a center point of the filter than the first end of the mounting portion, the second region having a transverse dimension decreasing toward a second end portion opposite the first end portion to form a second filter portion at the second end portion on the opposing side of the filter from the first filter portion, the filter including a plurality of vessel engaging members to engage the vessel wall to secure the filter within the vessel when released from the delivery device and left within the vessel after withdrawal of the delivery device from the vessel.

2. (original) The vessel filter of claim 1, wherein the second filter portion converges to a second converging region.

3. (original) The vessel filter of claim 2, wherein the first and second converging regions converge to a tubular region.

4. (original) The vessel filter of claim 1, wherein portions of the filter extending from the first end of the mounting portion to the first converging region angle radially inwardly and toward a center of the filter to direct particles toward the center.

5. (original) The vessel filter of claim 1, wherein the filter comprises a plurality of elongated struts having roughened surfaces to engage the vessel wall to increase retention.

6. (canceled) The vessel filter of claim 1, wherein the filter comprises a plurality of elongated struts having vessel engaging members with pointed ends extending from the elongated struts to engage the vessel wall to increase retention.

7. (original) The vessel filter of claim 1, wherein the filter is composed of shape memory material.

8. (original) The vessel filter of claim 1, wherein the filter includes a plurality of elongated struts extending from the first end portion to the second end portion, the opposing ends of at least one of the elongated struts being out of phase.

9. (currently amended) A vessel filter comprising a first region and a second region, the filter movable between a collapsed position for delivery to the vessel and an expanded position for placement within the vessel, the first region having a mounting portion for mounting the vessel filter within the vessel and a first filter portion converging to form a first converging region at a first end portion, the first converging region having a proximalmost end point, the mounting portion has a series of longitudinally extending members extending substantially parallel to a longitudinal axis of the filter to form an elongated outer surface for contact with the vessel wall when in the expanded position, the mounting portion having a proximalmost end point proximal of the proximalmost end point of the first converging region, the second region having a transverse dimension decreasing toward a second end portion opposite the first end portion to form a second filter portion at the second end portion on the opposing side of the filter from the first filter portion, the second filter portion having a second converging region, the second converging region having a distalmost end point, the distalmost end point being distal of the proximalmost end point of the first converging region and distal of the proximalmost end point of the mounting portion.

10. (original) The vessel filter of claim 9, wherein the mounting portion has a substantially uniform transverse dimension, the dimension being greater than the transverse dimension of the second region.

11. (previously amended) The vessel filter of claim 10, further comprising vessel engaging members on the longitudinally extending members of the mounting portion to enhance retention of the filter.

12. (previously amended) The vessel filter of claim 9, wherein the longitudinally extending members transition into a second component angled with respect to the longitudinal axis.

13. (currently amended) A vessel filter comprising a tubular member having a plurality of cutouts formed therein forming a series of elongated struts and movable between a first insertion configuration and a second deployed configuration, in the second configuration the struts extend substantially longitudinally from a first end portion of the filter to an intermediate portion, the struts further extending at one end from the intermediate portion to a second end portion of the filter at an angle to the longitudinal axis radially inwardly towards the longitudinal axis of the filter and extending at another end radially inwardly towards the longitudinal axis and back towards the second end portion, a first proximal filter portion having a first converging region and a second distal filter portion having a second converging region and being positioned at the second end portion of the filter, the first converging region having a proximalmost end point and the second converging region having a distalmost end point, the struts further forming a mounting portion having a proximalmost end point proximal of the proximalmost end point of the first converging region.

14. (original) The vessel filter of claim 13, wherein the elongated struts include retention elements to engage the vessel wall to increase retention.

15. (original) The vessel filter of claim 14, wherein the retention elements have pointed members extending integrally from the elongated struts.

16. (previously amended) The vessel filter of claim 13, further comprising a connecting rib extending between adjacent elongated struts.

17. (original) The vessel filter of claim 13, wherein end portions of at least one of the elongated struts are out of phase.

18. (original) The vessel filter of claim 13, wherein the portion extending radially inwardly of at least one of the elongated struts has a width greater than a longitudinally extending portion of the strut.

19. (original) The vessel filter of claim 13, wherein at least one of the elongated struts has varying widths along its length.

20. (currently amended) A method of implanting a vessel filter in a patient's body comprising the steps of:

providing a vessel filter having a mounting section and first and second filtering sections each terminating in a converging end region and a plurality of vessel engaging members, the first filtering section spaced axially inwardly from a tangent of the end of the mounting section and closer to a center of the filter so it is between a terminal end of the mounting section and the center of the filter, and the second filtering section spaced axially outwardly from the mounting section further from the center of the filter;

providing a delivery member containing the vessel filter in a collapsed configuration having a first diameter;

inserting the vessel filter in the collapsed configuration adjacent a surgical site so that the first filtering section faces in the direction of blood flow and the second filtering section is downstream of the first filtering section; ~~and~~

deploying the vessel filter from the delivery member so the vessel filter moves to a placement configuration secured within a vessel having a diameter larger than the first diameter and the first filtering section directs particles toward a center of the filter and the second

filtering section directs particles bypassing the first filtering section to the center of the filter; and

withdrawing the delivery member from the vessel leaving the filter secured within the vessel in the large diameter placement configuration with the vessel engaging members engaging a wall of the vessel.

21. (original) The method of claim 20, wherein the vessel filter is composed of shape memory material and movement of the vessel filter to the placement configuration moves the vessel filter towards a memorized configuration.

22. (original) The method of claim 21, further comprising the step of removing the implanted vessel filter from the patient's body.

23. (new) The method of claim 1, wherein the filter comprises a plurality of elongated struts, in the mounting region the struts have a curved region which curves in a distal direction and then curves back toward a proximalmost end.